

REMARKS

Claims 1-13 are pending in the Application. Claims 1-13 are rejected under 35 U.S.C. §101. Claims 1-13 are rejected under 35 U.S.C. §112. Applicants respectfully traverse these rejections for at least the reasons stated below and respectfully request that the Examiner reconsider and withdraw these rejections.

I. REJECTIONS UNDER 35 U.S.C. §101:

The Examiner rejects claims 1-13 under 35 U.S.C. §101 because independent claims 1, 10, 11 and 13 are allegedly merely claiming nonfunctional descriptive material and hence do not produce a useful, tangible result. Office Action (5/18/2006), page 4. Applicants respectfully traverse.

The Congressional intent, is that any new and useful process, machine, manufacture or composition of matter under the sun that is made by man is the proper subject matter of a patent. M.P.E.P. §2106. The subject matter courts have found to be outside the four statutory categories is limited to subject matter that is not a practical application or use of an idea, a law of nature or a natural phenomenon. *See, e.g., Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874); M.P.E.P. §2106. Claims 1-9 are directed to a method, which is not outside the four statutory categories, for determining the quality of a result of a clustering data processing operation, the result comprising a set of clusters, a cluster having a set of buckets for each variable. Claims 10-12 are directed to a method, which is not outside the four statutory categories, for data clustering and quality determination. Claim 13 is directed to a computer program product stored on a computer usable medium, which is not outside the four statutory categories, for determining the quality of a result of a clustering data processing operation, the result comprising a set of clusters, a cluster having a set of buckets for each variable.

Applicants respectfully contend that the claimed inventions in claims 1-13 satisfy the test for statutory subject matter recited in *In re Alappat*, and repeated in *State Street Bank & Trust Co. v. Signature Financial Group*, and *AT&T Corp. v.*

*Excel Communications, Inc. In re Alappat*, 33 F.3d 1526, 31 U.S.P.Q.2d 1545 (Fed. Cir. 1994); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d 1596 (Fed. Cir. 1998); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1526, 50 U.S.P.Q.2d 1547 (Fed. Cir. 1999). The claimed inventions produce a useful, concrete and tangible result in, *inter alia*, data clustering and quality determination and in determining the quality of a result of a clustering data processing operation.

The essential inquiry under *In re Alappat* is to determine whether the claimed subject matter as a whole is directed to a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea" or if, in contrast, the mathematical concept has been reduced to some practical application rendering it useful. *AT&T Corp.*, 172 F.2d at 1357, 50 U.S.P.Q.2d at 1451 (citing *In re Alappat*, 33 F.3d at 1543, 31 U.S.P.Q.2d at 1556-57). Moreover, in making the determination whether the claimed subject matter as a whole is a disembodied mathematical concept or if the concept has been reduced to some practical application rendering it useful, the claims must be construed in the light of the Specification. *See, AT&T Corp.*, 172 F.3d at 1357, 50 U.S.P.Q.2d at 1451 (stating that more than an abstract idea was claimed in *In re Alappat* because the "claimed invention as whole was directed toward forming a specific machine that produced the useful, concrete and tangible result of a *smooth wave form display*") (emphasis supplied). The single claim at issue in *In re Alappat* was directed to a rasterizer and recited elements in means plus function form. *In re Alappat*, 33 F.3d at 1540, 31 U.S.P.Q.2d at 1555. Additionally, none of the limitations recited in the claim at issue expressly claimed a "smooth wave form display". Indeed, the concrete, useful and tangible result relied upon in *In re Alappat*, namely, a smooth uniform display, appears in the background of the invention. *Kuriappan P. Alappat, et al.*, U.S. Patent No. 5,440,676 (col. 1, lines 9-10).

Likewise, in *AT&T Corp.*, the useful, nonabstract result relied upon in holding that the claimed invention was directed to statutory subject matter was that the PIC indicator therein held information about the call recipients PIC, which facilitated

differential billing of long-distance calls made by a subscriber. *AT&T Corp.*, 172 F.3d 1358, 50 U.S.P.Q.2d at 1452. However, the claim at issue in *AT&T Corp.* was directed to a method including the steps of generating a message record for an interexchange call, and including in the message record a PIC indicator having a value which is a function of whether or not the interexchange carrier associated with the terminating subscriber is a predetermined one of the interexchange carriers. *AT&T Corp.*, 172 F.3d at 1354, 50 U.S.P.Q.2d at 1449. Again, there was no express or explicit claim limitation directed to the useful, concrete, and tangible result relied upon in determining that the aforesaid claim was directed to statutory subject matter. *See, Id.* The relied upon PIC indicator that facilitates differential billing of long-distance calls appears, *inter alia*, in the summary of the invention. *Gerard P. Doherty, et al.*, U.S. Patent No. 5,333,184, col. 1, line 66 through col. 2, line 3.

Likewise, in *State Street Bank & Trust v. Signature Financial Group*, a useful and concrete and tangible result not expressed in an explicit limitation in the claim at issue was relied upon in holding that the claim was directed to statutory subject matter. *See, State Street Bank*, 149 F.3d at 1373, 47 U.S.P.Q.2d at 1601 (holding that the transformation of data by the claimed data processing system produced a useful, concrete and tangible result, namely a final share price momentarily fixed for recording and reporting purposes). The claimed invention recited no limitation directed to either a final share price or means for momentarily fixing the final share price for recording and reporting purposes. *See, State Street Bank*, 149 F.3d at 1371, 47 U.S.P.Q.2d at 1599. Indeed, the relied upon useful, concrete and tangible result in *State Street Bank*, namely a final share price momentarily fixed, is not explicitly recited in the *State Street Bank* patent, but is effectively a distillation of the Summary of the Invention. *See, R. Todd Boes*, U.S. Patent No. 5,193,056, col. 4, lines 36-61. Thus, it is beyond peradventure that when judging the claimed subject matter as a whole to determine patentability under 35 U.S.C. § 101, the claims must be construed in the light of the specification.

In short, the question whether a claim encompasses statutory subject matter focuses on the essential characteristics of the subject matter, in particular its utility. *State Street Bank*, 149 F.3d at 1375, 47 U.S.P.Q.2d at 1602.

The Examiner contends that the cited claims do not produce a useful, tangible result. However, claims 1-13 clearly do produce a useful, tangible result. For example, referring to claim 1, claim 1 is directed to a method for determining the quality of a result of a clustering data processing operation, which includes the steps of: determining a foreground frequency of a bucket within a first cluster; determining a background frequency of the bucket with respect to all of the clusters; comparing the foreground and background frequencies; and determining a quality index based on the comparison. Determining a foreground and a background frequency; comparing the foreground and background frequencies; and determining a quality index are steps that are directed to a useful, tangible, result, namely determining the quality of a result of a clustering data processing operation.

Similarly, referring to claim 10, claim 10 is directed to a method for data clustering, which includes the steps of: performing a number of data clustering operations; determining a quality index for each result of the data clustering operations; and selecting the result with the highest quality index as an end result of the data clustering. Performing a number of data clustering operations; determining a quality index for each result; and selecting the result with the highest quality index are steps that are directed to a useful, tangible, result, namely, selecting the end result of a clustering data processing operation.

Similarly, referring to claim 11, claim 11 is directed to a method for data clustering, which includes the steps of: selecting an initial set of clusters; determining a quality index for the clusters; and performing a number of iterations to improve the quality index. Selecting an initial set of clusters; determining a quality index for the clusters; and performing a number of iterations to improve the quality index are steps that are directed to a useful, tangible, result, namely, improving the quality index.

Similarly, referring to claim 13, claim 13 is directed to a computer program product for determining the quality of a result of a clustering data processing operation, which includes the steps of: determining first subprocesses for a foreground frequency of a bucket within a first cluster; determining second subprocesses for a background frequency of the bucket with respect to all of the clusters; comparing third subprocesses the foreground and background frequencies; and determining fourth subprocesses a quality index based on the comparison. Determining a foreground and a background frequency; comparing the foreground and background frequencies; and determining a quality index are steps that are directed to a useful, tangible, result, namely, determining the quality of a result of a clustering data processing operation.

As stated above, the inquiry under 35 U.S.C. §101 is whether there is a practical application, or result. *State Street Bank*, 149 F.3d at 1373, 47 U.S.P.Q.2d at 1601. As discussed above, claims 1-13 are directed to a method and computer program product for data clustering and quality determination. Hence, the subject matter of claims 1-13 has a practical application within the four statutory categories and is not an idea, a law of nature or a natural phenomenon.

Thus, Applicants respectfully contend that claims 1-13 constitute statutory subject matter. Applicants respectfully assert that the rejections of claims 1-13 under 35 U.S.C. §101 are in error.

## II. REJECTIONS UNDER 35 U.S.C. §112:

The Examiner has rejected claims 1-13 under 35 U.S.C. §112, second paragraph, for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Office Action (5/18/2006), page 5. In particular, the Examiner asserts that the step of "determining a quality index based on the comparison," as recited in claim 1, and similarly in claims 10, 11 and 13, is unclear. Office Action (5/18/2006), page 5. The Examiner continues by stating:

It's unclear to the Examiner on how the comparison between the foreground and background frequency would change or effect [sic] the quality of the index, since the claims don't disclose any thing related or claims the index or the index quality. The examiner believes there is a missing step between step c, and step d. Clarification is required. Office Action (5/18/2006), page 5.

Applicants respectfully traverse the assertion that Applicants failed to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

A rejection based on Applicants failure to claim the subject matter which Applicants regard as the invention is appropriate only where Applicants have stated, somewhere other than in the application as filed, that the invention is something different from what is defined by the claims. *In re Moore*, 439 F.2d 1232, 169 U.S.P.Q. 236 (C.C.P.A. 1971); M.P.E.P. §2172. The Examiner has not provided any evidence that the invention is something different from what is defined by claims 1, 10, 11 and 13. In fact, the invention is not different from what is defined by claims 1, 10, 11 and 13. Accordingly, Applicants respectfully assert that claims 1-13 are allowable under 35 U.S.C. §112, second paragraph, and respectfully request the Examiner to withdraw the rejections of claims 1-13 under 35 U.S.C. §112, second paragraph.

Further, a rejection under 35 U.S.C. §112, second paragraph, is not appropriate, when the scope of the claimed subject matter can be determined by one having ordinary skill in the art. M.P.E.P. §2173. Applicants respectfully assert that one having ordinary skill in the art can determine the scope of the limitation of "determining a quality index based on the comparison," as recited in claim 1, and similarly in claims 10, 11 and 13. Applicants respectfully direct the Examiner to page 8, line 1 – page 10, line 9 of the Specification which discusses, in one embodiment, how a quality index is determined based on the comparison between the relative foreground and background frequencies. Claims 1, 10, 11 and 13 clearly set forth the metes and bounds of the patent protection desired in relation to determining a quality index based on the comparison as discussed on page 8, line 1 – page 10, line 9 of the

Specification. The Examiner has not provided any evidence that a person of ordinary skill in the art would not be able to determine the scope of the claimed subject matter in claims 1, 10, 11 and 13. One having ordinary skill in the art can determine the scope of the claimed subject matter in claims 1-13. Consequently, Appellants respectfully assert that claims 1-13 are allowable under 35 U.S.C. §112, second paragraph, and respectfully request the Examiner to withdraw the rejections of claims 1-13 under 35 U.S.C. §112, second paragraph.

Further, the Examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. §112, second paragraph, should be whether the claim meets the threshold requirement of clarity and precision, not whether more suitable language or modes of expression are available. M.P.E.P. §2173.02. Definiteness of claim language must be analyzed, not in a vacuum, but in light of the content of the particular application disclosure; the teachings of the prior art; and the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. M.P.E.P. §2173.02. In reviewing a claim for compliance with 35 U.S.C. §112, second paragraph, the Examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. §112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent. *See, e.g., Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379, 55 U.S.P.Q.2d 1279, 1283 (Fed. Cir. 2000); M.P.E.P. §2173.02. As shown above, the scope of claims 1, 10, 11 and 13, and in particular the limitation "determining a quality index based on the comparison," when analyzed in light of the Specification, can be determined by one of ordinary skill in the art and therefore serves the notice function required by 35 U.S.C. §112, second paragraph. Consequently, Applicants respectfully assert that claims 1-13 are allowable under 35 U.S.C. §112, second paragraph, and respectfully request the Examiner to withdraw the rejections of claims 1-13 under 35 U.S.C. §112, second paragraph.

Further, the Examiner's basis for his rejection of claims 1, 10, 11 and 13 under 35 U.S.C. §112, second paragraph, is that it is unclear to the Examiner how the comparison between the foreground and background frequencies would change or effect the quality of the index. Office Action (5/18/2006), page 5. Applicants respectfully contend that this ground of rejection does not provide a basis for a rejection under 35 U.S.C. § 112, second paragraph. The purpose of a claim is not to explain technology or how it works. *S3 Inc. v. nVIDIA Corp.*, 59 U.S.P.Q.2d 1745, 1748 (Fed. Cir. 2001). The purpose is to state the legal boundaries of the patent grant. *Id.* Applicants respectfully assert that the claimed subject matter in claims 1-13 can be determined by one having ordinary skill in the art. The rejection under 35 U.S.C. § 112, second paragraph, is not appropriate if the scope of the claimed subject matter can be determined by one having ordinary skill in the art. M.P.E.P. §2173. Consequently, Applicants respectfully assert that claims 1-13 are allowable under 35 U.S.C. § 112, second paragraph, and respectfully request the Examiner to withdraw the rejections under 35 U.S.C. § 112, second paragraph.

Further, in response to the Examiner's statement that the Examiner believes there to be a missing step between steps (c) and (d), Applicants respectfully traverse. Applicants respectfully assert that claims 1, 10, 11 and 13 do not omit matter disclosed to be essential to the invention as described in the Specification. Accordingly, claims 1-13 are allowable under 35 U.S.C. §112, second paragraph.

Furthermore, the Examiner has not specifically pointed out the essential step deemed to have been omitted from claims 1, 10, 11 and 13. The Examiner must specify the matter disclosed to be essential to the invention in the Specification that was not claimed in claims 1, 10, 11 and 13. *See In re Mayhew*, 527 F.2d 1229, 188 U.S.P.Q. 356 (C.C.P.A. 1976); M.P.E.P. §2172.01. Again, Applicants respectfully assert that claims 1, 10, 11 and 13 do not omit matter disclosed to be essential to the invention as described in the Specification. Accordingly, claims 1-13 are allowable under 35 U.S.C. §112, second paragraph.

Furthermore, a rejection for omitting essential steps is not appropriate under 35 U.S.C. §112, second paragraph. M.P.E.P. §2172.01. Instead, such a rejection is

appropriate under 35 U.S.C. §112, first paragraph. M.P.E.P. §2172.01. Accordingly, claims 1-13 are allowable under 35 U.S.C. §112, second paragraph.

Additionally, as understood by Applicants, the Examiner asserts that the rejections of claims 1-13 under 35 U.S.C. §112, second paragraph, are valid because Applicants did not disclose the phrase "a quality index" or the term "index" prior to the limitation (d) in claim 1. Office Action (5/18/2006), page 6. Applicants respectfully assert that the phrase "a quality index" in limitation (d) of claim 1 does not begin with either a "the" or "said" thereby indicating that this is the first time that Applicants are using the phrase "a quality index" in claim 1. Applicants fail to understand how this forms a basis for a 35 U.S.C. §112, second paragraph, rejection. Accordingly, claims 1-13 are allowable under 35 U.S.C. §112, second paragraph.

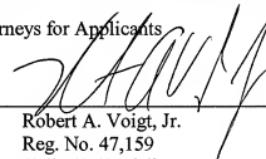
III. CONCLUSION

As a result of the foregoing, it is asserted by Applicants that claims 1-13 in the Application are in condition for allowance, and Applicants respectfully request an allowance of such claims. Applicants respectfully request that the Examiner call Applicants' attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining issues.

Respectfully submitted,

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